**APPENDIX P**
**BIOLOGICAL ASSESSMENT**
**Ironwood Forest National Monument**
**Travel Management Plan**

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# 1. PROJECT DESCRIPTION

## 1.1 Proposed Action

This Transportation Management Plan (TMP) identifies the management strategies and on-the-ground actions to implement the Monument travel route designations for motorized and non-motorized access for administrative purposes and public use established concurrently with the IFNM RMP Record of Decision (ROD). It is also to implement the resource-specific decisions of the RMP that require access or require protection from impacts related to use, maintenance and operation of the Monument transportation system (Appendix B of the TMP/EA). Input received during preparation of this plan identified the need for minor adjustments of a few route designations to accommodate administrative access to existing authorizations (Appendix C of the TMP/EA).

Further, vehicular travel would be restricted to designated roads, minimizing direct impacts and impacts to recruitment of forage plants. The proposed Transportation Maintenance program (Section 5.2 of the TMP) includes the road maintenance projects in Table 4 of the TMP, minimal improvements at portal sites (Appendix F) and designated group sites (Appendix G), and route closures and restoration projects (Appendix H). Throughout IFNM, overnight vehicle-based camping is restricted to limited campsites and large group camping to three identified sites, which would minimize the potential for human-caused wildfires to degrade foraging habitat and reduce recruitment of forage plants.

Proposed Monument Transportation Maintenance Guidelines and Criteria are shown in section 5.3 of the TMP. The travelway width, surface, grade, curve radius, side and overhead clearance, and associated physical parameters vary depending on the type of access vehicle and the intended use for a route. Currently, nearly all the existing routes on Monument lands are primitive roads that are unimproved, receive very low traffic volume, and are traveled at low speeds by high clearance, four-wheel drive vehicles.

Proposed Ancillary Facilities to Accommodate Travelers are described in section 5.4 of the TMP. The following improvements are to accommodate travelers along Monument travel routes, consistent with the recreation management objectives in the RMP, to manage primarily motorized visitor use and protect Monument objects.

**Monument Portal Sites**: Portal sites are proposed near the Monument boundary along public access routes. The portal site improvements consist of parking turnouts, an informational kiosk with visitor information and map, site identification signing, and mitigation of safety and resource conditions as needed depending on the location. The capacity of the portal sites would vary depending on location and anticipated demand. The proposed monument portal sites are described in Appendix F.

**Local/Community Access Points**: Local or community access points are proposed to provide access to the Monument from residential areas adjacent to the Monument, or on non-federal inholdings, where residents make up some of the demand for recreational access. These points of ingress and egress would typically access Monument lands for non-motorized purposes (hiking, equestrian, mountain bicycle). Gates and informational and regulatory signing would be installed in cooperation with community residents.

**Group Recreation Sites**: Group sites are proposed along Silverbell Road and at the Waterman Mountains restoration site. These locations are currently receiving recreational group use and activity. The existing sites would be maintained, and expansion would be considered. The group sites would accommodate organized group recreational or educational activities under Special Recreation Permit, and would be open for public recreational use (camping, picnicking). The sites would be designed for a capacity of approximately 10 to 15 vehicles. The proposed group sites conceptual plans are described in Appendix G.

**Dispersed Recreation Sites**: Existing dispersed recreation sites along the designated roads and primitive roads in the Monument would be monitored. The recreation sites would be maintained in a primitive condition. The only improvements that would be provided are a parking turnout (all dispersed sites are at existing turnouts), signing, and a designated stone fire ring. The sites would be monitored for use levels and associated impacts, and action would be taken to prevent impacts from spreading or damaging Monument objects.

Section 5.9 details the proposed methods to implement route closures and use restrictions will depend on site-specific conditions at the point of closure, and the route designation objectives. Physical barriers such as gates, fencing, boulders, and bollards would be used to restrict vehicle access while accommodating allowable uses. Closure devices would be designed to tie to natural topographic or vegetation barriers.

On administrative routes, access control devices would be designed to safely accommodate non-motorized passage (foot, horse and bicycle), including around locked gates that limit vehicle access to administrative use.

Section 5.10 details restoration and rehabilitation for BLM routes not designated to provide access. Restoration efforts will be designed to achieve proper functioning condition according to BLM Land Health Standards. Routes typically will be allowed to reclaim and revegetate naturally, unless treatment is necessary. Most of these routes receive little traffic and many are reclaiming naturally, with vegetation regrowth in the travelway. The access points for these routes would be posted with signs and/or blocked with barriers to prevent vehicle entry as needed, depending on site conditions. Barriers will be installed 60-200 feet from the intersection with the designated route to allow a spur for parking and turning around, and to allow the barrier to tie in with natural features. Restoration will be at or near the barrier as needed to restrict vehicle access. Heavy equipment, if needed, will be used to install barrier, rip severely compacted soil, or correct drainage and erosion problems. Natural revegetation will be promoted by site preparation treatments as indicated by site conditions. Routes with severe soil compaction may be ripped to loosen the topsoil, ditched to control surface runoff, and re-graded or re-contoured to aid reclamation, using methods with the least impact. New plantings may be established with cuttings from locally available cactus species. Prickly pear and cholla would be targeted plants for restoration site perimeters due to their barrier effect, combined with ease of propagation from cuttings.

Restoration project plans will be prepared and cultural surveys and clearances will be completed prior to ground disturbance. Restoration work will be monitored during construction, and impacts to Monument objects will be avoided. The restoration sites are summarized in Table 6, and the locations are shown on Map 1. New impacts detected through monitoring activities will be restored promptly after being identified.

Monitoring and evaluation to assess progress toward objectives is detailed in section 6.0 of the TMP/EA.

## 1.2 Project Location Area

The IFNM is approximately 80 miles south of Phoenix and 45 miles northwest of Tucson, in Pinal and Pima counties, Arizona, as shown on Map 3.1 Location and Vicinity. The nearest community is the Town of Marana, and several residential areas are located near or adjacent to the Monument including Green Acres, Silverbell Estates, Blanco Wash, Arizona City, and Red Rock. Several residential areas are also located on private land inholdings, including Red Hill and several ranching headquarters.

The proclaimed Monument boundary includes approx. 189,000 acres, including Monument lands administered by the BLM, a United States Air Force military withdrawal, Arizona State Trust lands, Pima County land and private property as noted in Table 1. The intermingled land ownership within the Monument and along access routes presents challenges in managing the Monument transportation system.

**Table 1. Land Ownership in the Ironwood Forest National Monument**

| Ownership | Total (Acres) | Percentage (%) |
|---|---|---|
| BLM (Monument lands)[1] | 128,759 | 68 |
| Military withdrawal[2] | 299 | <1 |
| Arizona State Trust land | 54,741 | 29 |
| County land (Pima) | 632 | <1 |
| Private land | 4,549 | 3 |
| **Total** | **188,619** | **100** |

The IFNM is in a relatively remote area accessed from Interstate 10 (I-10) and Interstate 8 (I-8) by an extensive network of county-maintained roads primarily serving rural residential, agricultural, ranching, resource extraction, and recreational land uses. Monument lands are traversed by several county-maintained roads and a system of primitive roads and trails across intermingled ownership.

The county-maintained roads important for access to the Monument include Avra Valley, Red Rock, Silverbell, Pump Station, Mile Wide, Manville and El Tiro roads in Pima County; and Sasco, Sunland Gin, Harmon and Night Sky roads in Pinal County. The sections of these roads crossing Monument lands are authorized under ROWs.

Connected routes across non-Monument land are not under the jurisdiction of the BLM and are not subject to the BLM route designations. Routes across inholdings remain under the jurisdiction of the landowner, and will be managed in accordance with the designations established in the RMP if the land or interest in the land is acquired.

[1] Area includes 361 acres reconveyed under the Waterman Acquisition project in July 2014 (EA# DOI-BLM-AZ-G020-2013-0037-EA).

[2] Military withdrawal is in the process of being relinquished. Upon relinquishment, it would be managed as part of the Monument.

## 2.0 AFFECTED ENVIRONMENT: DESCRIPTION OF PLANT COMMUNITIES IN THE PROJECT AREA

The Monument is in a Sonoran Desert environment, with hot summers, cool winter seasons, and the existing Monument transportation routes traverse creosote flats, moderate bajada slopes, and steep mountainous terrain. Numerous large to small desert washes that are normally dry, and flow briefly during summer monsoon storm events dissect the topography. The elevation ranges from 1,540 feet in the Aguirre Valley flats north of the Sawtooth Mountains, to 4,260 feet on Silverbell Peak the highest point in the Monument. Storms, which produce surface runoff that affects existing roads, occur in the summer, when intense, short duration events may bring over 2 inch of precipitation within an hour. These storm events cause road washouts at low water crossings, and runoff intercepted by the roadways has downcut the roads significantly in places. The existing Monument roads are in poor condition due to continuing erosion and lack of maintenance. Vegetation in the Monument is classic Sonoran Desert upland habitat, dominated by saguaro, Bigelow's cholla, and staghorn cholla cacti, ironwood, mesquite, palo verde, creosote bush, brittlebush, triangle-leaf bursage, ocotillo, and white thorn acacia among other plants. Vegetation is sparse in the creosote flats, with little in the way of topographic or vegetation barriers to impede cross-country travel. Cross-country vehicle use creates new tracks and new impacts on Monument resources. In the bajada slopes and mountainous terrain, topographic barriers and vegetation cover provide barriers to cross-country vehicle travel.

## 3.0 SPECIES ADDRESSED IN THE BIOLOGICAL ASSESSMENT

Potential impacts from implementation of the IFNM TMP (based on the preferred alternative) were considered for all species that appear on the USFWS lists for Pima and Pinal counties in Arizona. This list was reviewed by BLM to eliminate species that would not be affected by implementation of the IFNM TMP. The two species that potentially could be affected by implementation of the IFNM RMP were evaluated in this BA and include the endangered lesser long-nosed bat (*Leptonycteris yerbabuenae*) and Nichol Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*). Species not affected by the preferred alternative are presented in Table 1 with a brief explanation of why these were excluded from consideration as potentially affected species.

The primary objectives of this BA are to (1) describe the purpose of and need for the TMP (identified as the preferred alternative in the TMP/EA); (2) describe the resource-specific management actions including desired future conditions, and implementation level decisions that are being considered as part of the TMP; (3) provide detailed information on the natural history of federally listed species potentially occurring within the planning area; (4) evaluate the potential effects of the TMP on these species and their critical habitat; (5) provide a determination of effect (no effect; may affect, not likely to adversely affect; or may affect, likely to adversely affect) for the listed species; and (6) describe any conservation measures that could be implemented to reduce impacts associated with the TMP, or to promote conservation and recovery of listed species pursuant to Section 7(a)(1) of the ESA.

**Table 1: Special Status Species Excluded from Further Consideration and Reason for Exclusion**

| Species (*Scientific Name*) | Federal Status | Habitat Requirements | Reason For Exclusion |
|---|---|---|---|
| **MAMMALS** | | | |
| Jaguar (*Panthera onca*) | E | ***Habitat:*** Jaguar is known from a variety of habitats, showing a high affinity to lowland wet habitats, typically swampy savannas, or tropical rain forests. These may occur in warmer, more arid habitat types, including oak-pine woodland. ***Elevation:*** 1,600 to 9,000 feet | No suitable habitat in the planning area. |
| Ocelot (*Leopardus pardalis*) | E | ***Habitat***: Humid tropical and subtropical forests, savannahs, and semi-desert thorn scrub with dense cover. ***Elevation***: below 8,000 feet | No suitable habitat in the planning area. |
| **BIRDS** | | | |
| Bald eagle (*Haliaeetus leucocephalus*) SW Breeding Population | Delisted | ***Habitat:*** Large trees or cliffs near water (reservoirs, rivers, and streams) with abundant prey. ***Elevation:*** between 1,000 and 6,600 feet | No suitable habitat in the planning area. |
| California brown pelican *(Pelecanus occidentalis californicus)* | Delisted | ***Habitat:*** Water or inaccessible rocks (either offshore or on mainland), and mudflats, sandy beaches, wharfs, and jetties. ***Elevation:*** less than 3,000 feet | No suitable aquatic habitat within the planning area. |
| Masked bobwhite (*Colinus virginianus ridgewayi*) | T | ***Habitat:*** Desert grasslands with dense native grasses, forbs, and brush. The species is closely associated with white ball acacia (A*cacia angustissima)*. Presently only known from reintroduced populations on Buenos Aires National Wildlife Refuge. ***Elevation:*** 1,000 to 4,000 feet | Outside current known range of species. |
| Mexican spotted owl (*Strix occidentalis lucida*) | T | ***Habitat:*** Nests in canyons and dense forests with multi-layered foliage structure in older forests of mixed-conifer or ponderosa pine/Gambel oak vegetation. ***Elevation:*** 4,100 to 9,000 feet | No suitable habitat in the planning area. |
| Southwestern willow flycatcher (*Empidonax traillii extimus*) | E | ***Habitat:*** Cottonwood/willow and tamarisk vegetation communities along rivers, streams and desert washes. ***Elevation:*** below 8,500 feet | No suitable habitat in the planning area. |
| Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) | C | ***Habitat:*** Large blocks of riparian woodland (cottonwood, willow, or tamarisk galleries). ***Elevation:*** below 6,500 feet | No suitable habitat in the planning area. |
| Yuma clapper rail (*Rallus longirostris yumanensis*) | E | ***Habitat:*** Freshwater and brackish marshes with emergent vegetation. ***Elevation:*** below 4,500 feet | No suitable habitat in the planning area. |
| **REPTILES/AMPHIBIANS** | | | |
| Chiricahua leopard frog (*Rana chiricahuensis*) | T | ***Habitat:*** Permanent or nearly permanent water sources including streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs. ***Elevation:*** 3,300 to 8,900 feet | Outside current known range of species. |

| Species (*Scientific Name*) | Federal Status | Habitat Requirements | Reason For Exclusion |
|---|---|---|---|
| Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*) | C | ***Habitat:*** Primarily a pond turtle, prefers mud or sandy bottoms. Also found in streams. Known from a pond and limited stream habitat at Quitobaquito Springs in Organ Pipe Cactus National Monument, Arizona, and from a few locations in the nearby Rio Sonoyta, Sonora, Mexico. ***Elevation:*** 1,100 feet | Outside current known range of species. |
| **FISH** | | | |
| Desert pupfish (*Cyprinodon macularius*) | E | ***Habitat:*** Shallow springs, small streams, and marshes. Tolerates saline and warm water. ***Elevation:*** below 5,000 feet | No suitable aquatic habitat in the planning area. |
| Gila chub (*Gila intermedia*) | E | ***Habitat:*** Pools, springs, cienegas, and streams. Found on multiple private lands, including land managed by the Nature Conservancy, the Audubon Society, and others. Also occurs on federal and State lands and in Sonora, Mexico. ***Elevation:*** 2,000 to 5,500 feet | No suitable aquatic habitat in the planning area. |
| Gila topminnow (*Poeciliopsis occidentalis occidentalis*) | E | ***Habitat:*** Small streams, springs, cienegas, and vegetated shallows. Species historically occurred in backwaters of large rivers but is currently isolated in small streams and springs. ***Elevation:*** below 4,500 feet | No suitable aquatic habitat in the planning area. |
| Loach minnow *(Tiaroga cobitis)* | T | ***Habitat:*** Found in large to small perennial streams with swift shallow water over cobble and gravel. ***Elevation:*** below 8,000 feet | No suitable aquatic habitat in the planning area. |
| Razorback sucker (*Xyrauchen texanus*) | E | ***Habitat:*** Riverine and lacustrine areas, generally not in fast-moving water; may also use backwater areas. ***Elevation:*** below 6,000 feet | No suitable aquatic habitat in the planning area. |
| Spikedace (*Meda fulgida*) | T | ***Habitat:*** Moderate to large perennial streams with gravel cobble substrates and moderate to swift velocities over sand and gravel substrates. Recurrent flooding and natural hydrograph are important. Presently found in Aravaipa Creek, Eagle Creek, Verde River, and the Gila River from the San Pedro River to Ashurst-Hayden Dam in Arizona, and the Gila River and its East and West Forks in New Mexico. ***Elevation:*** below 6,000 feet | No suitable aquatic habitat in the planning area. |
| **INVERTEBRATES** | | | |
| San Xavier talussnail (*Sonorella eremita*) | CA | Deep limestone rockslide with outcrops of limestone and decomposed granite. Elevations from 3,850 to 3,920 feet (1,173 to 1,195 m) on the northwest aspect of San Xavier Hill (White Hill) in Pima County. | Outside current known range of species. |

| Species (*Scientific Name*) | Federal Status | Habitat Requirements | Reason For Exclusion |
|---|---|---|---|
| **PLANTS** | | | |
| Acuña cactus (*Echinomastus erectocentrus* var. *acunensis*) | C | ***Habitat:*** Well-drained knolls and gravel ridges in Sonoran desertscrub. Six populations of acuña cactus are currently known, five of these are in the United States and one is in Sonora, Mexico. The U.S. populations include one at Organ Pipe Cactus National Monument; one near a mine pit on private land in Ajo, Arizona; one northeast of Ajo on BLM-administered lands; one east of the state prison in Florence, Arizona; one on BLM-administered land near Mineral Mountain near Florence, Arizona; and one on the Sonoran Desert National Monument (Tersey 2004). ***Elevation:*** 1,300 to 2,000 feet | Outside current known range of species. |
| Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) | E | ***Habitat:*** Ecotone between interior chaparral and Madrean evergreen woodland. Open slopes, in narrow cracks between boulders, and in understory of shrubs. Known from the Superstition Mountains, Tonto National Forest. ***Elevation:*** 3,700 to 5,200 feet | Outside current known range of species. |
| Goodding's onion (*Allium gooddingii*) | CA | Forested drainage bottoms and moist north facing slopes of mixed conifer and spruce fir forests above 7,500 feet (2,286 m) elevation. | Outside current known range of species. |
| Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*) | E | ***Habitat:*** Cienegas, perennial low-gradient streams, and wetlands. ***Elevation:*** 3,500 to 6,500 feet | No suitable habitat in the planning area. |
| Kearney blue star (*Amsonia kearneyana*) | E | ***Habitat:*** West-facing drainages in the Baboquivari Mountains in stable partially shaded coarse alluvium along a dry wash. ***Elevation:*** 3,600 to 3,800 feet | Outside current known range of species. |
| Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*) | E | ***Habitat:*** Sonoran desertscrub or semi-desert grassland communities in alluvial valleys or hillsides with rocky to sandy or silt soils. ***Elevation:*** 2,300 to 5,000 feet | Outside current known range of species. |

NOTES: Status Definitions: E = federally Endangered, T = federally Threatened, C = Candidate for Listing, CA = Conservation Agreement.

# 4.0 ANALYSIS OF EFFECTS OF THE PROPOSED ACTION ON T & E SPECIES

## 4.1 Lesser Long-Nosed Bat

### 4.1.1 Status

The lesser long-nosed bat (*Leptonycteris yerbabuenae*) was listed as endangered in 1988 under the accepted taxonomic name at the time of *Leptonycteris sanborni*, Sanborn's long-nosed bat (USFWS 1988). No critical habitat has been designated for this species. A recovery plan was completed in 1997 (USFWS 1997) under the species' revised taxonomic name of *Leptonycteris curasoae yerbabuenae*, lesser long-nosed bat. Loss of roost and foraging habitat, as well as direct taking of individual bats during animal control programs, particularly in Mexico, have contributed to the current endangered status of the species. The recovery plan states that the species will be considered for delisting when three major maternity roosts in the U.S., two post-maternity roosts in the U.S., and three maternity roosts in Mexico have remained stable or increased in size for at least five years, following the approval of the recovery plan. The five-year review has been completed and recommendations support down listing of the species to threatened (USFWS 2005, USFWS 2007).

#### *4.1.1.1 Description*

The lesser long-nosed bat is one of three genera in the family Phyllostomidae that occur in Arizona (AGFD 2003) and one of three species in the genus, *Leptonycteris*. *Leptonycteris yerbabuenae* is the only species of the genus occurring in Arizona (AGFD 2003).

The lesser long-nosed bat is a medium-sized bat with grayish to reddish-brown fur. Juveniles have gray fur. Its elongated rostrum bears a small, triangular nose-leaf, and its ears are relatively small and simple in structure (USFWS 1997). It has three caudal vertebrae but no externally visible tail (Hoffmeister 1986).

#### *4.1.1.2 Distribution*

The lesser long-nosed bat is migratory and is found throughout its historical range, from southern Arizona and extreme southwestern New Mexico, through western Mexico, along the Baja Peninsula, and southeast to El Salvador. It has been recorded in southern Arizona from the Picacho Mountains (Pinal County), southwest to the Agua Dulce Mountains (Pima County), southeast to the Chiricahua Mountains (Cochise County), and south to the international boundary. In New Mexico, it occurs in the Animas and Peloncillo Mountains (USFWS 2001). Occasionally, individuals have been reported outside the normal range; for example, there are records of individuals from the Phoenix area and the Bill Williams River during July and August (Hoffmeister 1986, Hinnman and Snow 2003). The species usually is not present in Arizona or New Mexico in the winter (Hinman and Snow 2003).

#### *4.1.1.3 Threats*

The primary threats to the lesser long-nosed bat are roost disturbance and loss of foraging habitat. The colonial roosting behavior of this species, where most of the population congregates at only a few roost sites, increases the risk of significant declines or extinction due to abandonment of roosts following disturbance. The aggregated nature of colonies is an intrinsic vulnerability to the continued existence of this species (USFWS 1997). Threats to the foraging habitat of the lesser long-nosed bat include excessive harvesting of agaves in Mexico; collection and destruction of cacti in the U.S.; conversion of habitat for

agricultural uses and urban development; and the introduction of bufflegrass (*Pennisetum ciliare*), cheatgrass (*Bromus tectorum*), Mediterranean grass (*Schismus barbatus*), and other invasive species that increase the risk of fire in upland Sonoran desertscrub (Brown and Minnich 1986). Other threats to foraging habitat include woodcutting, drought, fires, loss of desert grasslands, and other forms of development.

#### *4.1.1.4 Species Surveys at Ironwood Forest National Monument*

Krebbs and Petryszyn (2003) performed species-specific surveys for the lesser long-nosed bat at IFNM between December 2001 and May 2003. Protocol involved observing saguaro cacti for foraging bats during evening hours in the Ragged Top, Waterman, and Sawtooth Mountains. Additionally, mist nets were used to sample potential habitats in the Silver Bell and Sawtooth Mountains, and roost surveys for lesser long-nosed bats were conducted in the Silver Bell, Waterman, Ragged Top, and Sawtooth Mountains. Species-specific surveys resulted in one observation of a nectar-feeding bat foraging at a saguaro and the identification of one night roost that was used by nectar-feeding bats near the Silver Hills Mine. Krebbs and Petryszyn (2003) indicated that this evidence suggests that the lesser long-nosed bat is roosting and foraging in the IFNM. However, they qualified the utilization of the IFNM as probably low or incidental (Krebbs and Petryszyn 2003).

### 4.1.2 Analysis and Determination of Effects

Direct effects on a species are those that result directly or immediately from an action identified in the TMP. For example, an action that would immediately remove or destroy habitat or displace a species from its habitat or an area would have a direct effect. Indirect effects are caused by or result from the TMP, and occur later in time after the TMP is implemented. Potential effects could result from (1) the displacement of lesser long-nosed bats from feeding sites and night roosts by human activity or (2) loss or alteration of potential feeding or night roosting habitat associated with the preferred alternative. Since there is such a lengthy time period for the life of the TMP (i.e., direct effects could occur under the preferred alternative for 5 to 10 years) and since the indirect effects resulting from the preferred alternative could combine with direct effects or could be difficult to distinguish from direct effects, the two types of effects are not differentiated here but, instead, are discussed jointly in the following discussion.

Effects to the lesser long-nosed bat from loss of or degradation and disturbance at day and maternity roosts would not occur within the decision area, because none of these roosts occur on the IFNM. Therefore, only potential effects to nighttime roosts and foraging habitat are applicable to this analysis.

While recreational use of IFNM may degrade foraging habitat and reduce recruitment of forage plants, 124 miles of routes would be maintained to remain open to motorized uses, impacts would be reduced on approximately 118 miles of routes limited to administrative vehicle use, 90 miles of non-motorized trails will be managed to accommodate non-mechanized, non-motorized use year round (i.e. hiking and equestrian) and 17 miles of routes would be obliterated and/or reclaimed, reducing direct impacts to foraging habitat.

### 4.1.3 Conclusion and Determination

The effect of implementation of the program under the preferred alternative would be beneficial for the lesser long-nosed bat because conservation actions incorporated into the design of all specific actions that could affect the lesser long-nosed bat. No critical habitat has been designated for this species, thus none

would be affected. Natural processes will be encouraged, and the overall ecological condition of the decision area would be maintained or improved during the 5-10 year implementation period of the TMP. Implementation of the preferred alternative in the IFNM TMP/EA may not result in adverse effects to the lesser long-nosed bat. We present this conclusion on LLNB for the following reasons; Throughout IFNM, overnight vehicle-based camping would be restricted to limited campsites and large group camping to three identified sites, which would minimize disturbance to LLNB and minimize the potential for human-caused wildfires to degrade LLNB habitat. In the Waterman Mountains VHA, use of routes by motor vehicles will be reduced with conversion of some routes to non-motorized use, reducing potential for direct impact to LLNB foraging habitat.

The details in the proposed action are in conformance with the Biological Opinion on the Ironwood Forest National Monument Resource Management Plan, and implement the conservation recommendations from that BO, specifically:

- *We recommend that BLM monitor disturbance, such as expansion of campsite areas and expansion of road corridors, to monitor effects of recreation activities to LLNB foraging habitat and recruitment of forage plants and to adaptively manage recreational activities to address impacts. We recommend utilization of photogrammetric analysis of satellite imagery in a GIS based platform.*

## 4.2 Nichol Turk's Head Cactus

### 4.2.1 Status

The Nichol Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*), was listed as endangered (44 FR 61929) on October 26, 1979. Critical habitat has not been designated for this species.

A recovery plan for the Nichol Turk's head cactus was completed in April 1986 (USFWS 1986). Future down listing of Nichol Turk's head cactus to threatened status would require permanent protection of 75 percent of the known habitat according to the steps outlined in the recovery plan (USFWS 1986). The down listing criteria would be re-evaluated for adequacy upon attainment, or when data indicate that the criteria for down listing can be revised. The criteria for delisting have not been established. In March 1986, BLM completed the Nichol Turk's Head Cactus Habitat Management Plan, which identified the following management objectives: (1) protect the habitat, (2) provide optimum habitat for naturally occurring populations of Nichol Turk's head cactus on approximately 2,370 acres of BLM-administered land, and (3) assist in the recovery of this taxon (USFWS 1986).

### 4.2.2 Description

Nichol Turk's head cactus is a small, blue-green to yellowish-green barrel cactus with a single columnar stem that reaches approximately 1.5 feet in height and is 8 inches in diameter (AGFD 1999). It has pink to bright purple flowers and fruits that are covered with woolly white hairs. There are commonly eight ribs on the plants, and a spiral on the trunk of mature plants. Each areole consists of three robust central spines and five radial spines (AGFD 1999). The cactus invariably has a single stem, but often several seedlings grow around its base, giving the appearance of small clumps (AGFD 1999).

The Nichol Turk's head cactus begins flowering in late April and continues through mid-July with an occasional plant flowering as late as November (AGFD 1999). Plant growth occurs primarily from March through May (AGFD 1999).

### 4.2.3 Distribution

This taxon is known from only four populations that occur in close association with limestone and limestone-derived deposits. One of these is in Sonora, Mexico and three are in the United States. One of the U.S. populations occurs in the Vekol Mountains in the Tohono O'odham Nation; the second is found in the Waterman Mountains, which are divided between the Tohono O'odham Nation and the IFNM.

Based on surveys conducted by McIntosh et al. (2007) the largest population of Nichol Turk's head cactus on the south-central slopes of the Waterman Mountains, is approximately 175 to 298 plants (USFWS 2009b). In 1983, BLM personnel surveyed a population on the north side of Waterman Peak and found 1,179 cacti. Unauthorized blading of a landing strip removed an estimated 350 plants in the early 1980s, and illegal collecting of plants by individuals and institutions has been well documented and has caused further losses in the Waterman Mountains (USFWS 1986). Mining and road construction on private patented land also led to the loss of a sizeable but unknown number of cacti (USFWS 1986).

Dimmit et al. (2003) found plants on seven of the 15 flora plots that were surveyed on limestone sites in the Waterman Mountains. Where plants occurred, these ranged from rare to locally abundant. There are no current population estimates for other sites.

### 4.2.4 Habitat

Nichol Turk's head cactus grows at elevations from 2,000 to 3,600 feet on dissected alluvial fans of mountain toe-slopes and on the inclined mountain slopes themselves. This cactus is restricted to soils derived from limestone (USFWS 1986). In the Waterman Mountains, this cactus species occurs primarily on the Pennsylvanian aged Horquilla Limestone, the Permian Earp Formation, the Permian Concha Limestone, and the Mississippian Escabroasa Limestone (USFWS 1986). Most of the populations are on Quaternary alluvium derived from the adjacent bedrock; however, some of the populations grow on bedrock terraces and saddles of the Waterman Mountains. On the alluvial fan sites within the IFNM, the cactus grows in dendritic patterns along the edges of washes. Plants growing in montane habitats occur in places with more exposed rock than those on the alluvial fans (USFWS 1986).

Plants are typically found in open areas with few trees or shrubs. Regardless of whether or not limestone soils are present, the cactus is less abundant at the base of the alluvial fans where canopy cover of trees and shrubs increases. Individuals at the base of alluvial fans grow, flower, and survive at lower rates than plants higher up on the bajadas where less cover occurs (AGFD 1999, USFWS 1986). Dominant plant species associated with Nichol Turk's head cactus include foothill paloverde (*Parkinsonia mircophyllum*), triangle-leaf bursage (*Ambrosia deltoidea*), white ratany (*Krameria grayi*), brittlebush (*Encelia farinose*), prickly pear cactus (*Opuntia* spp.), saguaro (*Carnegiea gigantea*), ocotillo (*Fouquieria splendens*), and cholla (*Cylundropuntia* spp.).

### 4.2.5 Analysis and Determination of Effects

Implementation of the preferred alternative of the IFNM TMP/EA could have both adverse and beneficial effects on the Nichol Turk's head cactus and its habitat. Of the 17 resource programs, 6 (air quality, geology and caves, scenic and visual, paleontological resources, lands with wilderness characteristics, and energy and minerals) would have little or no effect on the Nichol Turk's head cactus or its habitat. Under the remaining 11 resource programs, most decisions would protect or improve the quality of habitat for the species, which would contribute to the maintenance and enhancement of the existing population;

however, some decisions in two resource programs could adversely affect the Nichol Turk's head cactus or its habitat. Those resource areas are grazing and recreation.

The effects to the cactus analyzed here are limited to those actions that would occur within or adjacent to known habitats and populations in the decision area. Within the Monument, the area with a known population and suitable habitat is found in the Waterman Mountains in an area of approximately 2,240 acres of public land. Inholdings (non-public land) include approximately 600 acres of State Trust land and 494 acres of private land. Natural factors that could exacerbate the effects from management actions related to the preferred alternative include the cacti's restriction to a unique and localized substrate, its restriction to relatively flat or gentle slopes in an area, which has a highly dissected topography, its rather small population and restricted gene pool, and its small geographic area.

### 4.2.6 Conclusion and Determination

The effect of implementation of the program under the preferred alternative would be beneficial for the Nichol Turk's head cactus because conservation actions are incorporated into the design of all specific actions that could affect the Nichol Turk's head cactus. No critical habitat has been designated for this species, thus none would be affected. Natural processes will be encouraged, and the overall ecological condition of the decision area would be maintained or improved during the 5-10 years of TMP on-the-ground project implementation. The proposed route maintenance standards and maintenance cycle frequencies will continue protection of Nichol Turk's head cactus and its habitat long term by continuing to keep motorized traffic on designated routes. Implementation of the preferred alternative in the IFNM TMP/EA may not result in adverse effects to the Nichol Turk's head cactus. We present this conclusion on Nichol Turk's head cactus for the following reasons: 1) Throughout IFNM overnight vehicle-based camping would be restricted to limited campsites and large group camping to two identified sites, which would minimize disturbance to Nichol Turk's head cactus and minimize the potential for human-caused wildfires to degrade Nichol Turk's head cactus habitat; 2) In the Waterman Mountains VHA, signing of dispersed campsites would encourage compliance with a 0.25-mile buffer around stands of Nichol Turk's head cactus; 3) In the Waterman Mountains VHA, use of routes by motor vehicles will be reduced with physical closure of some routes to non-motorized use, reducing potential for direct impact to Nichol Turk's head cactus.

The details in the proposed action are in conformance with the Biological Opinion on the Ironwood Forest National Monument Resource Management Plan, and implement the conservation recommendations from that BO, specifically:

- *We recommend that BLM monitor disturbance, such as expansion of campsite areas and expansion of road corridors, to monitor effects of recreation activities to Nichol Turk's head cactus habitat and to adaptively manage recreational activities to address impacts. We recommend utilization of photogrammetric analysis of satellite imagery in a GIS based platform.*

## 5.0 Analysis and Determination of Effects on Special Status Species

Two Special Status Species that could be affected by the TMP are the Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*) and the Sonoran desert tortoise (*Gopherus morafkai*). Direct effects on a species are those that result directly or immediately from an action identified in the TMP. For example, an action that would immediately remove or destroy habitat or displace a species from its habitat or an area

would have a direct effect. Indirect effects caused by or result from the TMP, and occur later in time after the RMP is implemented. Potential effects could result from (1) the displacement of Sonoran desert tortoise and Tucson shovel-nosed snake from feeding sites and cover by human activity, or (2) loss or alteration of potential habitat associated with the preferred alternative. Since there is such a lengthy time period for the life of the TMP (i.e., direct effects could occur under the preferred alternative for 5-10 years) and since the indirect effects resulting from the preferred alternative could combine with direct effects or could be difficult to distinguish from direct effects, the two types of effects are not differentiated here but, instead, are discussed jointly in the following discussion. Effects to the Sonoran desert tortoise and the Tucson shovel-nosed snake from loss of, or degradation and disturbance to cover and feeding sites would occur within the decision area.

## 5.1 Tucson Shovel-Nosed Snake

### 5.1.1 Description

Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*) is small 25 to 42.5 centimeters (cm) (9.8 to 16.7 inches) long, with a coloring that is mimics coral snakes (U.S. Fish and Wildlife Service [USFWS] 2010a). The scales are smooth, in 15 rows and a divided anal plate. Their overall coloring is pale yellow to cream-colored with 21 or more black or brown saddle-like bands across the back, with orange-red saddle-like bands in between. As with other members of this species, the Tucson shovel-nosed snake has a flattened nose, countersunk jaw, nasal valves and a concave belly (Brennan and Holycross 2006, USFWS 2010a).

### 5.1.2 Status – Past and Present

The Tucson shovel-nosed snake is currently a candidate species under the ESA. Previously this species had been proposed for listing as a threatened or endangered species with critical habitat in 2008 and again in 2010 (USFWS 2010a). After review of scientific and commercially available literature, USFWS published a 12-month finding in the Federal Register on March 31, 2010, that listing the Tucson shovel-nosed snake is warranted but precluded by other higher priority actions (USFWS 2010a).

### 5.1.3 Habitat Requirements

Klauber (1951) found that sand hummocks with desert shrubs are the preferred habitat for shovel-nosed snakes. Tucson shovel-nosed snakes are found in in creosote-mesquite floodplain areas and associated with soft sandy loam soils with sparse gravel (USFWS 2010a).

### 5.1.4 Distribution and Population Status

Distribution of the Tucson shovel-nosed snake subspecies is northern Pima County, central Pinal County and south-central Maricopa County (Brennan 2008). Distribution of this species intergrades with the Colorado shovel-nosed snake (*Chionactis occipitalis annulata*) and the Mohave shovel-nosed snake *Chionactis occipitalis occipitalis*) (Brennan 2008, Wood et al. 2008). Tucson shovel-nosed snake has been recorded in Pima County in the Avra and Santa Cruz valleys and in western Pinal County and eastern Maricopa County (USFWS 2010a). The last verifiable record of Tucson shovel-nosed snake in Pima County was in 1979. Although systematic surveys throughout their potential range have not been completed, the area occupied by Tucson shovel-nosed snake is southwestern Pinal County and eastern Maricopa County (USFWS 2010a). Rosen's (2003, 2004, and 2008) surveys detected four Tucson shovel-nosed snakes near Eloy and Picacho in Pinal County. AGFD conducted surveys at the Florence Military Reservation in 2008 and found 29 Tucson shovel-nosed snakes; however, 23 of these were road-kill mortalities (USFWS 2010a).

### 5.1.5 Analysis and Determination of Effects

Direct effects on a species are those that result directly or immediately from an action identified in the Transportation Management Plan (TMP). Map 10.3 shows the probable and suitable habitat for the Tucson shovel-nosed snake and the relationship of the IFNM to these habitats. For example, an action that would immediately remove or destroy habitat or displace a species from its habitat or an area would have a direct effect. Indirect effects caused by or result from the TMP, and occur later in time after the TMP is implemented. Potential effects could result from (1) the mortality or displacement of Tucson shovel-nosed snakes by human activity, or (2) loss or alteration of habitat associated with the preferred alternative. Since there is such a lengthy time period for the life of the TMP (i.e., direct effects could occur under the preferred alternative for 5-10 years) and since the indirect effects resulting from the preferred alternative could combine with direct effects or could be difficult to distinguish from direct effects, the two types of effects are not differentiated here but, instead, are discussed jointly in the following discussion. Adverse effects to the Tucson shovel-nosed snake are from mortality caused by human activity, primarily motorized recreation, the loss of or degradation of habitat or fragmentation of habitat by road construction, use and maintenance. Beneficial effects to the Tucson shovel-nosed snake are from the restoration of disturbed areas with native species, and protecting objects of the monument that indirectly help retain existing habitat and prey base.

Some decisions could adversely affect habitat for the Tucson shovel-nosed snake; however, these effects would be insignificant and would not reduce populations or preclude use of the action area by Tucson shovel-nosed snake.

*Travel Management*

Within the decision area, 124 miles of routes would be maintained to remain open to motorized uses, approximately 118 miles of routes limited to administrative vehicle use, 90 miles of non-motorized trails will be managed to accommodate non-mechanized, non-motorized use year round (i.e. hiking and equestrian) and 17 miles of routes would be obliterated and/or reclaimed, reducing direct impacts to foraging habitat. Travel management decisions under the preferred alternative would close 10,880 acres to off-highway vehicle (OHV) use and limit use to designated routes on 117,520 acres. Physically closing these acreages and limiting use to designated routes (through barriers, signing and appropriate road maintenance) would reduce potential impacts on Tucson shovel-nosed snake habitat and prey species habitat. Illegal off-road travel could still result in harm to young columnar cacti and agaves, but the implementation of a designated route system allows for easier detection and closure of unauthorized or "wildcat" routes. The route closures and restrictions in this action would reduce potential disturbance to stands of columnar cacti and agaves.

### 5.1.6 Cumulative Effects

Under the Endangered Species Act (ESA), cumulative effects are those effects of future non-federal (state, local governments, or private) activities on endangered and threatened species or critical habitat that are reasonably certain to occur within the action area of the federal activity subject to consultation. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Future federal actions are subject to the consultation requirements established in Section 7 of the ESA, and therefore are not considered cumulative to the actions under consideration.

Of the reasonably foreseeable future actions, regional population growth is likely to have the greatest impact on the Tucson shovel-nosed snake and its habitat. Increased growth in the region is likely to lead to the conversion of large tracts of Sonoran Desert for urban development and associated infrastructure. Within the IFNM boundaries, over 59,000 acres, or approximately one-third of the land, is either privately owned or State Trust land. Where these lands are lost to development and urban sprawl, Tucson shovel-nosed snake habitat and prey habitat would be reduced and could be lost permanently.

As the human population within the planning area and the surrounding region increases, and the demand for recreational access increases, suitable habitat on private and state lands would be subject to increased impacts from human activities. Increased demand for recreational uses by a growing urban population, particularly illegal OHV use in the IFNM, may lead to the loss of potential and probable habitat in and around the planning area.

As impacts to Tucson shovel-nosed snake prey base and habitat occur across increasingly larger portions of the landscape, survivorship could decrease due to increased motorized vehicle use, exposure to predators, and the loss of habitat connectivity and foraging opportunities.

### 5.1.7 Conclusion and Determination

The preferred alternative would be mostly beneficial for the Tucson shovel-nosed snake, because conservation actions are incorporated into the design of all specific actions that could impact the snake, natural processes will be encouraged, and the overall ecological condition of the decision area would be maintained or improved during the life of the TMP. There could be some localized site-specific impacts from motorized vehicles, and general effects from recreation, but these impacts would not reduce populations or preclude use of the decision area by the Tucson shovel-nosed snake. Implementation of the preferred alternative in the IFNM TMP/EA may result in adverse effects to the Tucson shovel-nosed snake and its habitat. Of the 17 resource programs, three (air quality, energy and minerals, and paleontological resources) would have no effect on the Tucson shovel-nosed snake or its habitat. Under the remaining 14 resource programs, most would result in beneficial effects through improvement of the quality of foraging habitat for the species, which would contribute to the maintenance and enhancement of existing populations. Adverse effects from recreation and livestock grazing could result in the loss of habitat and/or individuals. In addition, actions are proposed by the BLM that should assist with the conservation and recovery of the species.

Many actions, proposed by the BLM, should assist with the conservation and recovery of the species. Due to conservation actions incorporated into the plan and conservation policies it is concluded that implementation of the preferred alternative may affect individuals but is not likely to cause a trend to Federal listing or loss of viability to Tucson shovel-nosed snake.

## 5.2 Desert Tortoise

### 5.2.1 Description

The Sonoran desert tortoise (*Gopherus morafkai*) is one of two populations of desert tortoise that occur in Arizona. Recent work suggests that the Sonoran population is a distinct species with a new taxonomic name of *Gopherus morafkai* (Murphy et al. 2011). Weighing between 8 and 15 pounds (3.6 to 6.8 kilograms, the desert tortoise is recognized by its high, domed upper shell that is gray to orange-brown. The shell measures 8 to 15 inches (20 to 38 centimeters) long (USFWS 2009a). Hind limbs of the desert tortoise are stocky and elephantine in appearance while the forelimbs are paddle-shaped and used for digging (Brennan and Holycross 2006).

### 5.2.2 Status – Past and Present

On April 2, 1990, USFWS designated the Mojave population of the desert tortoise as a threatened species under the Endangered Species Act. Currently, the Mojave population of the desert tortoise is recognized as a distinct population segment under the Act. On December 14, 2010, USFWS determined that any categorized area of the Sonoran population of the desert tortoise as a candidate species with a listing priority number of 6 (USFWS 2010b). Desert tortoises that live at the IFNM are included in the candidate species listing.

***Threats***

Threats to desert tortoises are from the loss of habitat and habitat degradation and fragmentation, primarily from human uses. Other human activities that pose a threat to desert tortoises include illegal collection, off highway vehicles, poor livestock grazing management, and surface disturbance from mining, military activities, and rights-of-way development. Disease and increased incidence of fire have also been implicated in desert tortoise declines in the Mojave Desert populations. (USFWS 2009a and 2010b).

### 5.2.3 Distribution and Population Status

The desert tortoise is found in southern California and Nevada, southwestern Utah, and Arizona in the United States. Its range extends south through the Mexican states of Sonora and Sinaloa. The distribution of the Sonoran desert tortoise in the United States is east and south of the Colorado River, extending south and east from northwestern Mohave County in Arizona (USFWS 2010b). Results from long-term monitoring plots throughout Arizona indicate that the population has declined over 50 percent between 1987 and 2006 (USFWS 2010b).

### 5.2.4 Analysis and Determination of Effects

Direct effects on a species are those that result immediately from an action identified in the TMP. For example, an action that would immediately remove or destroy habitat or displace a species from its habitat or an area would have a direct effect. Map 10.3 shows the Sonoran desert tortoise habitat and the relationship of the IFNM to this habitat. Indirect effects result from the TMP, and occur later in time after the TMP is implemented. Potential effects could result from (1) the displacement of desert tortoise by human activity, or (2) loss or alteration of habitat associated with the preferred alternative. Since there is such a lengthy time period for the life of the RMP (i.e., direct effects could occur under the preferred alternative for 5-10 years) and since the indirect effects resulting from the preferred alternative could combine with direct effects or could be difficult to distinguish from direct effects, the two types of effects are not differentiated here but, instead, are discussed jointly in the following discussion. Adverse effects to the Sonoran desert tortoise would be from loss of or degradation of habitat or fragmentation of habitat by road construction, and recreation use. Beneficial effects to the action area include restoration of disturbed areas with native species, and protecting objects of the Monument that indirectly help maintain desert tortoise habitat.

Implementation of the preferred alternative in the IFNM TMP/EA would result in adverse effects to the Sonoran desert tortoise and its habitat. Of the 17 resource programs, four (air quality, scenic and visual, paleontological resources, and energy and minerals) would have no effect on the Sonoran desert tortoise or its habitat. Under the remaining 13 resource programs, most would result in beneficial effects through improvement of the quality of foraging habitat for the species, which could contribute to the maintenance and enhancement of existing populations. Some decisions could degrade habitat for the Sonoran desert tortoise; however, these effects would be mitigated by the conservation measures in the plan and should not reduce populations or preclude use of the action area by the Sonoran desert tortoise.

*Travel Management*

Within the decision area, 124 miles of routes would be maintained to remain open to motorized uses, approximately 118 miles of routes physically limited to administrative vehicle use, 90 miles of non-motorized trails will be managed to accommodate non-mechanized, non-motorized use year round (i.e. hiking and equestrian) and 17 miles of routes would be obliterated and/or reclaimed, reducing direct impacts to foraging habitat. Travel management decisions under the preferred alternative would close 10,880 acres to OHV use and limit use to designated routes on 117,520 acres. Physically closing these acreages and limiting use to designated routes would reduce potential impacts on vegetation and Sonoran desert tortoise habitat. Illegal off-road travel could still result in harm to vegetation and areas suitable for

desert tortoises to construct burrows, but the implementation of a designated route system would encourage compliance, and would facilitate detection, closure and rehabilitation of unauthorized or "wildcat" routes. The proposed signed speed limits would decrease the potential for vehicle-tortoise collisions on motorized routes. The implementation of route closures and restrictions in this action would reduce potential disturbance to vegetation and areas suitable for desert tortoise burrows.

### 5.2.5 Cumulative Effects

Under the ESA, cumulative effects are those effects of future non-federal (state, local governments, or private) activities on endangered and threatened species or critical habitat that are reasonably certain to occur within the action area of the federal activity subject to consultation. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Future federal actions are subject to the consultation requirements established in Section 7 of the ESA, and therefore are not considered cumulative to the actions under consideration.

Of the reasonably foreseeable future actions, regional population growth is likely to have the greatest impact on the Sonoran desert tortoise and its habitat. Increased growth in the region is likely to lead to the conversion of large tracts of Sonoran Desert for urban development and associated infrastructure. Within the IFNM boundaries, over 59,000 acres, or approximately one-third of the land, is either privately owned or State Trust land. Where these lands are lost to development and urban sprawl, primary habitat and dispersal habitat for the desert tortoise would be lost permanently.

As the human population within the planning area and the surrounding region increases, and the demand for recreational access increases, potential forage plants on private and state lands would be subject to increased impacts from human activities. Increased demand for recreational uses by a growing urban population, particularly illegal OHV use in the IFNM, may lead to the loss of habitat in and around the planning area.

As impacts to Sonoran desert tortoise food resources and habitat occur across increasingly larger portions of the landscape, desert tortoise survivorship could be reduced. Survivorship also could decrease through increased exposure to predators due to the loss of shelter sites, increased harassment or injury or death from domestic dogs, increased spread of disease, changes to the patterns of habitat use, and connectivity between populations of Sonoran Desert tortoises between mountain ranges within the IFNM and with mountain ranges outside the IFNM. Impacts to vegetation and food resources may be most evident in those years where weather patterns, fire, or other factors also have affected vegetation.

### 5.2.6 Conclusion and Determination

The programs under the preferred alternative would be beneficial for the Sonoran desert tortoise, because conservation actions are incorporated into the design of all specific actions that could affect the desert tortoise, natural processes will be encouraged, and the overall ecological condition in the decision area would be maintained or improved during the life of the TMP. Implementation of the preferred alternative in the IFNM TMP/EA would not result in adverse effects to the Sonoran desert tortoise and its habitat. Of the 17 resource programs, three (air quality, scenic and visual, and paleontological resources) would have no effect on the desert tortoise or its habitat. Under the remaining 14 resource programs, most would result in beneficial effects through improvement of the quality of foraging habitat for the species, which would contribute to the maintenance and enhancement of existing populations.

Due to conservation actions incorporated into the plan and conservation policies, it is concluded that implementation of the preferred alternative may affect individuals but is not likely to cause a trend to Federal listing or loss of viability to Sonoran desert tortoise.

## 5.3 Sonoran Pronghorn

### 5.3.1 Status – Past and Present

On March 11, 1967(32 Federal Register 4001), USFWS designated the Sonoran pronghorn as an endangered species under the Endangered Species Act. A Recovery Plan was completed in December 1982, revised in December 1998, 2001 and amended in 2002. Critical habitat has not been designated for the pronghorn; however, a final rule was published on May 5, 2011 to establish two nonessential experimental populations of the endangered Sonoran pronghorn under section 10(j) of ESA (USFWS 2011).

### 5.3.2 Threats

Threats to the Sonoran pronghorn include highways, fences, railroads, developed areas, and irrigation canals; human activities that disturb pronghorn or degrade habitat; wildfire; drought; and limited population size and demographics. Conversion of habitat to other uses and barriers to movement caused by roads, canals, train tracks, and fences are the primary causes of the decline of the Sonoran pronghorn. Other compounding and equally important causes include overgrazing, diseases brought in with domestic livestock, and overhunting, particularly during the first half of the 20th Century.

### 5.3.3 Habitat Requirements

All Sonoran pronghorn populations occur in Sonoran Desert scrub vegetation communities of Arizona Uplands and Lower Colorado River Valley within wide alluvial valleys and bajadas of southern Arizona and Sonora, Mexico. The Arizona Upland vegetation is found on the bajadas is characterized by a relatively complex assemblage of species including paloverde (*Parkinsonia spp*.), mesquite (*Prosopis juliflora*), creosotebush (*Larrea tridentata*), ironwood (*Olneya tesota*), ocotillo (*Fouquieria splendens*), cholla (*Opuntia spp*.), and saguaro (*Carnegiea gigantea*). Creosote and white bursage (*Ambrosia dumosa*) comprise the major vegetation in the Lower Colorado River Valley subdivision. Typical habitat ranges in elevation from 610 to 1,219 meters (2000 to 4,000 ft.) (USFWS 2010b).

### 5.3.4 Conclusion and Determination

The IFNM falls within the easternmost part of the 10(j) area for the Sonoran pronghorn, but it is not likely that any of the pronghorn would ever make it to the IFNM during the life of the plan; therefore there will not be any affects to the 10(j) area from the proposed action.

# 6 CONCLUSIONS

**Table 2: Summary of Determination of Effects on Listed Species Analyzed in this Biological Assessment**

| Common Name | Scientific Name | Status | Determination |
|---|---|---|---|
| Lesser long-nosed bat | *Leptonycteris yerbabuenae* | E | May affect, not likely to adversely affect |
| Nichol Turk's head cactus | *Echinocactus horizonthalonius* var. *nicholii* | E | May affect, not likely to adversely affect |

**Table 2: Summary of Determination of Effects on Special Status Species Analyzed in this Biological Assessment**

| Common Name | Scientific Name | Status | Determination |
|---|---|---|---|
| Tucson shovel-nosed snake | *Chionactis occipitalis klauberi* | C | May affect, not likely to adversely affect |
| Sonoran desert tortoise | *Gopherus morafkii* | C | May affect, not likely to adversely affect |
| Sonoran pronghorn | *Antilocapra americana* | 10(j) area | No affect |

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